

# Science Curriculum



Cooperative  
Education East

## Aims of Science

Please refer to our Curriculum and Rationale document which can be found on our schools' websites.

<https://banham.cee.coop/>, <https://bunwell.cee.coop/>, <https://thompson.cee.coop/>

At the Cooperative Education East Trust, we recognise the importance of Science in every aspect of daily life. The Scientific area of learning is concerned with increasing pupils' knowledge and understanding of our world, and with developing skills associated with Science as a process of enquiry. We aim to develop a natural curiosity, respect for organisms and the environment around us as well as opportunities for hands-on investigation and critical evaluation. Critical thinking skills are key to scientific enquiry and we always encourage children to ask questions of themselves and the world around them in order to make sense of what they are learning.

Our Science teaching offers opportunities for children to:

- develop scientific knowledge and conceptual understanding;
- develop understanding the world they live in through various types of scientific enquiry that help them to answer scientific questions about the world around them;
- be equipped with the scientific knowledge required to understand the uses and implications of Science, today and for the future;
- develop the essential scientific enquiry skills to deepen their scientific knowledge;
- use a range of methods to communicate information;
- develop a respect for the materials and equipment they handle with regard to their own, and other children's safety;
- develop an enthusiasm and enjoyment of scientific learning and discovery.

The Developing Experts Scheme of Work for Science works alongside the National Curriculum to provide a structure and skill development for the science curriculum being taught throughout the school, with clear progression of skills and knowledge through the year groups, as evidenced through our progression of skills documents. There is a clear expectation of what children should know upon leaving each year group along with a clear expectation of how these knowledge and skills will be built on in subsequent year groups when topics are re-visited.

Regular retrieval practice is encouraged to ensure that once skills and knowledge have been taught, they are used regularly in order to avoid them being forgotten. This retrieval practice may take the form of quizzes or mini assessments depending on what the teacher feels is most appropriate for their class. Questioning is also used regularly to test understanding in all science lessons.

At the Cooperative Education East Trust we follow the National Curriculum for Science which can be found here: <https://www.gov.uk/government/publications/national-curriculum-in-england-science-programmes-of-study/national-curriculum-in-england-science-programmes-of-study>

The Developing Experts Science curriculum can be found here:

<https://www.developingexperts.com/>

We have taken the National Curriculum attainment targets for Science and grouped them into learning lenses in order to align them with our **C.A.R.E.** vision. As a Trust we ensure we **C.A.R.E.** and that our children will be **Confident**, **Able** to meet future challenges, **Responsible** members of the community and **Effective** Learners.

In order to describe Science across the school we have developed a shared language to be used with all learners across each class and year group.

The 3 learning lenses in Science that we use are:

- **Investigation and Enquiry - questions, research, measuring, observations, identify, group and classify**
- **Design - recording, making predictions, fair testing and problem solving**
- **Evaluation - interpretation of results, making predictions, pattern seeking and understanding**

## Curriculum Map

### Cycle A

|                     | <u>Autumn 1</u>  | <u>Autumn 2</u>  | <u>Spring 1</u>   | <u>Spring 2</u>  | <u>Summer 1</u>  | <u>Summer 2</u>   |
|---------------------|--|--|---|--|--|---|
| <u>Reception</u>    | <p>How I grow.<br/><i>Our body - learn about the parts of our body, how our body changes and how we are unique.</i></p> <p>All about me - facial features, body parts (brain, lungs, heart), the five senses.</p> <p>Seasons of the year (Autumn) Exploring Autumn leaves.</p> <p>Our school and my route to school.</p> <p><i>Harvest Food - Vegetables. Understand which vegetables grow over ground or underground. Name several types of vegetables. Identify three different types of vegetables.</i></p> | <p>Explore the natural world around them.</p> <p>Describe what they see, hear and feel whilst outside.</p> <p><i>The senses - naming exploring the 5 senses</i></p> <p>Understand the effect of changing seasons on the natural world around them. Animals that hibernate (hedgehogs etc)<br/>Light and dark - shadows &amp; reflections</p> | <p><i>Weather and Seasons - explore how snow melts.</i></p> <p>Recognise some environments that are different from the one in which they live (Antarctica &amp; London)</p> <p><i>Space - What is a planet? What are the names of the planets?</i></p> <p>Forces: push, pull, twist.</p> <p>Air transport Water transport</p> | <p>What grows that we can eat. Healthy food choices.</p> <p><i>Health and Safety - Know about the people we can trust. Identify safe strangers. Explain where to go if I need help. Understand the term 'stranger danger'.</i></p> <p><i>Forces - Group objects based on whether they float or sink. Explain what 'sink' and 'float' means.</i></p> <p><i>Food - Learn about the importance of diet and understand how to stay healthy. (carrying into Summer 1)</i></p> | <p>Ongoing - Changes in environment.</p> <p>Ongoing - Changes in Seasons.</p> <p>Farming and habitats - think about life cycles and habitats.</p> <p>What things need to grow and how they grow.</p> <p>Planting and seeds.</p> <p>Protecting our local environment.</p> <p><i>Insects - knowing where insects live, their habitat and what they need to survive.</i></p> <p><i>Animals - to learn about which animals live on the farm, farm animals, the products they produce and the role of farm animals.</i></p> | <p>Ongoing - Changes in Seasons.</p> <p>Wild animals in our local environment.<br/><i>Animals - to learn about where animals live and what they need to survive. Explain what some animals' habitats are like and what they need to survive in their habitat. Describe an animal's habitat. Know where some domestic and wild animals live.</i></p> |
| <u>EYFS Ongoing</u> | <i>Weather and Seasons - learn about seasonal changes.</i>   |  |   |  | <i>Growing - plants are living, where they come from and how we look after them.</i>   |   |
| <u>Year 1/2</u>     | Everyday Materials 1   | Living Things and Their Habitats   | Plants – Year 1   | Everyday Materials 2   | Animals Including Humans 1 – Growth  | Animals Including Humans – About Me   |
| <u>Year 3/4</u>     | Animals Including Humans – Teeth and the Food  | Sound  | Living Things and Their Habitats  | Rocks  | Light  | Electricity   |

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|                 | Chain                |   |                           |   |  |  |
| <b>Year 5/6</b> | Changes of Materials | Living Things and Their Habitats – Classification | Evolution and Inheritance | Animals Including Humans – The Circulatory System | Living Things and Their Habitats – Life Cycles | Animals Including Humans – Age Development |

## Cycle B

|                         | <b><u>Autumn 1</u></b>   | <b><u>Autumn 2</u></b>   | <b><u>Spring 1</u></b>  | <b><u>Spring 2</u></b>   | <b><u>Summer 1</u></b>   | <b><u>Summer 2</u></b>   |
|-------------------------|--|--|---|--|--|--|
| <b><u>Reception</u></b> | <p>How I grow.<br/><i>Our body - learn about the parts of our body, how our body changes and how we are unique.</i></p> <p>All about me - facial features, body parts (brain, lungs, heart), the five senses.</p> <p>Seasons of the year (Autumn) Exploring Autumn leaves.</p> <p>Our school and my route to school.</p> <p><i>Harvest Food - Vegetables. Understand which vegetables grow over ground or underground. Name several types of vegetables. Identify three different types of vegetables.</i></p> | <p>Explore the natural world around them.</p> <p>Describe what they see, hear and feel whilst outside.</p> <p><i>The senses - naming exploring the 5 senses</i></p> <p>Understand the effect of changing seasons on the natural world around them. Animals that hibernate (hedgehogs etc) Light and dark - shadows &amp; reflections</p> | <p><i>Weather and Seasons - explore how snow melts.</i></p> <p>Recognise some environments that are different from the one in which they live (Antarctica &amp; London)</p> <p><i>Space - What is a planet? What are the names of the planets?</i></p> <p>Forces: push, pull, twist.</p> <p>Air transport Water transport</p> | <p>What grows that we can eat. Healthy food choices.</p> <p><i>Health and Safety - Know about the people we can trust. Identify safe strangers. Explain where to go if I need help. Understand the term 'stranger danger'.</i></p> <p><i>Forces - Group objects based on whether they float or sink. Explain what 'sink' and 'float' means.</i></p> <p><i>Food - Learn about the importance of diet and understand how to stay healthy. (carrying into Summer 1)</i></p> | <p>Ongoing - Changes in environment.</p> <p>Ongoing - Changes in Seasons.</p> <p>Farming and habitats - think about life cycles and habitats.</p> <p>What things need to grow and how they grow.</p> <p>Planting and seeds.</p> <p>Protecting our local environment.</p> <p><i>Insects - knowing where insects live, their habitat and what they need to survive.</i></p> <p><i>Animals - to learn about which animals live on the farm, farm animals, the products they produce and the role of farm animals.</i></p> | <p>Ongoing - Changes in Seasons.</p> <p>Wild animals in our local environment.<br/><i>Animals - to learn about where animal live and what they need to survive. Explain what some animals' habitats are like and what they need to survive in their habitat. Describe an animal's habitat. Know where some domestic and wild animals live.</i></p> |

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|----------------------------|---|----------------------------|-----------------|---|--|--|
| <b><u>EYFS Ongoing</u></b> | <i>Weather and Seasons - learn about seasonal changes</i> |                            |                 |   | <i>Growing - plants are living, where they come from and how we look after them.</i> |  |
| <b><u>Year 1/2</u></b>     | Animals Including Humans – All About Animals              | Uses of Everyday Materials | Plants – Year 2 | Seasonal Changes  | Habitats Around the World  | Animals Including Humans – Life Cycles |
| <b><u>Year 3/4</u></b>     | Scientific Enquiry  | States of Matter           | Plants          | Animals Including Humans – Nutrition, Skeletons and Muscles | Living Things and Their Habitats – Conservation                                      | Forces and Magnets                     |
| <b><u>Year 5/6</u></b>     | Earth and Space   | Properties of Materials    | Light           | Electricity   | Looking After Our Environment  | Forces                                 |

## Early Years Curriculum

The EYFS framework is structured across seven areas of learning rather than subject areas. Below is a table highlighting how skills taught in Reception feed into the National Curriculum subjects.

The statements from the Early Years Foundation Stage Profile Handbook 2022 are prerequisite skills within the National Curriculum. The table below outlines the most relevant statements taken from the Early Learning Goals in the Profile which link to the teaching of Science in KS1 and KS2. The most relevant statements for Science are taken from the following area of learning:

Understanding the world - ELG The Natural World

Children at the expected level of development will:

- Explore the natural world around them, making observations and drawing pictures of animals and plants;
- Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class;
- Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter

| <u>Early Years Curriculum</u>   | <u>Learning Lenses</u>                                     | <u>When is it taught?</u>  |
|---|--|--|
| Explore the natural world around them, making observations and drawing pictures of animals and plants   | <b>Investigation and Enquiry</b>                           | <b>Autumn 1 - all about me: facial features, body parts, describing places in our local area,</b><br><b>Autumn 2 - animals that hibernate, the five senses,</b><br><b>Autumn 1 &amp; 2 - exploring autumn leaves,</b><br><b>Spring 1 - recognise some environments that are different from the one in which they live</b><br><b>Summer 1 - life on the farm (animals and plants), life cycles, plants and seeds</b><br><b>Summer 2 - animals and plants in the local area, protecting our local environment</b><br><br>Throughout all terms there will be a focus on seasonal changes. |
| Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class | <b>Investigation and Enquiry<br/>Evaluation</b>            | <b>Autumn 1 - familiarising with the local area and comparing to Norwich as a city, to be able to make contrasts.</b><br><b>Spring 1 - recognise some environments that are different from the one in which they live, Earth and Space</b><br><b>Summer 1 - farming and habitats</b>   |
| Understand some important processes and changes in the natural world around them, including the seasons and   | <b>Investigation and Enquiry<br/>Design<br/>Evaluation</b> | <b>Autumn 1 - Vegetables that grow and where they grow</b><br><b>Autumn 2 - Seasons (Autumn)</b><br><b>Autumn 2 - light and shadow</b>   |

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| changing states of matter |  | <b>Spring 1 - Seasons (Winter), changing states (water to ice and snow), forces, air transport and water transport</b><br><b>Spring 2 - Seasons (Spring), growing and planting, forces</b><br><b>Summer 1 &amp; 2 - Seasons (Summer)</b> |
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### Key Stage 1

The principal focus of science teaching in key stage 1 is to enable pupils to experience and observe phenomena, looking more closely at the natural and humanly constructed world around them. They should be encouraged to be curious and ask questions about what they notice. They should be helped to develop their understanding of scientific ideas by using different types of scientific enquiry to answer their own questions, including observing changes over a period of time, noticing patterns, grouping and classifying things, carrying out simple comparative tests, and finding things out using secondary sources of information. They should begin to use simple scientific language to talk about what they have found out and communicate their ideas to a range of audiences in a variety of ways. Most of the learning about science should be done through the use of first-hand practical experiences, but there should also be some use of appropriate secondary sources, such as books, photographs and videos.

‘Working scientifically’ is described separately in the programme of study, but must always be taught through and clearly related to the teaching of substantive science content in the programme of study. Throughout the notes and guidance, examples show how scientific methods and skills might be linked to specific elements of the content.

Pupils should read and spell scientific vocabulary at a level consistent with their increasing word-reading and spelling knowledge at key stage 1.

| <b>National Curriculum</b>   | <b>Learning Lenses</b>   | <b>When is it taught?</b>  | <b>Links with EYFS and KS2</b>  |
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| <b><u>Working scientifically</u></b><br>During years 1 and 2, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content: <ul style="list-style-type: none"> <li>● Asking simple questions and recognising that they can be answered in different ways.</li> <li>● Observing closely, using simple equipment.</li> <li>● Performing simple tests.</li> <li>● Identifying and classifying</li> <li>● Using their observations and ideas to suggest answers to questions.</li> <li>● Gathering and recording data to help in answering questions.</li> </ul> | <b>Investigation and Enquiry</b><br><b>Design</b><br><b>Evaluation</b> | <b>Throughout the key stage 1 curriculum, linking in to the knowledge content and giving the children a clear context for applying the skills they will be learning.</b> | <b>The working scientifically skills are the threads that pull together the whole of the science curriculum. These skills will be taught through each programme of study and built upon as children move through their time in key stage 1, preparing them for further in depth study and development of these skills in key stage 2.</b> |
| <b><u>Plants (Year 1)</u></b><br>Pupils should be taught to: <ul style="list-style-type: none"> <li>● identify and name a variety of common wild and garden plants, including deciduous and</li> </ul>   | <b>Investigation and Enquiry</b><br><b>Design</b><br><b>Evaluation</b> | <b>Cycle A Spring 1</b><br><br><b>Cycle B Spring 1</b>   | <b>This is in the National Curriculum as a year 1 and year 2 topic. We have placed one unit of this work alongside a local area geography study, to allow the children the opportunity to explore plants in the</b>   |



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| <p>evergreen trees.</p> <ul style="list-style-type: none"> <li>● Identify and describe the basic structure of a variety of common flowering plants, including trees.</li> </ul> <p><b>Plants (Year 2)</b><br/>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>● Observe and describe how seeds and bulbs grow into mature plants.</li> <li>● Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.</li> </ul>   |   |   | <p>local environment, expanding their learning beyond the classroom.</p> <p><b>EYFS</b><br/>Autumn 1&amp;2<br/>Spring 2<br/>Summer 1 &amp; 2</p> <p><b>KS2</b><br/>Year 3/4 Cycle B Spring 1</p>  |
| <p><b>Animals including humans (Year 1)</b><br/>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>● Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals.</li> <li>● Identify and name a variety of common animals that are carnivores, herbivores and omnivores.</li> <li>● Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals including pets.</li> <li>● Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.</li> </ul> <p><b>Animals including humans (Year 2)</b><br/>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>● Notice that animals, including humans, have offspring which grow into adults.</li> <li>● Find out about and describe the basic needs of animals, including humans, for survival (water, food and air).</li> <li>● Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.</li> </ul> | <p><b>Investigation and Enquiry Design Evaluation</b></p> | <p>Cycle A – Summer 1 and Summer 2</p> <p>Cycle B – Autumn 1 and Summer 2</p> | <p>This is in the National Curriculum as a year 1 and year 2 topic. The knowledge and skills developed in this topic will be revisited at various points across key stage 1 and also in key stage 2 to ensure the information can be recalled accurately. One of these units is paired with a geography unit about the Arctic, so children will be able to apply their knowledge directly to animals that live in this environment. Children will be encouraged to recall taught knowledge when they cover other units in both History and Geography.</p> <p><b>EYFS</b><br/>Autumn 1 &amp; 2<br/>Summer 1 &amp; 2</p> <p><b>KS2</b><br/>Year 3/4 Cycle A Autumn 1 - Animals Including Humans, Teeth and the Food Chain<br/>Year 5/6 Cycle A Spring 2 - Animals Including Humans, The Circulatory System<br/>Year 5/6 Cycle A Summer 2 - Animals Including Humans, Age Development<br/>Year 3/4 Cycle B Spring 2 - Animals Including Humans, Nutrition, Skeletons and Muscles</p> |
| <p><b>Everyday materials (Year 1)</b><br/>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>● Distinguish between an object and the material from which it is made.</li> <li>● Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water and rock.</li> <li>● Describe the simple physical properties of a variety of everyday materials.</li> <li>● Compare and group together a variety of everyday materials on the basis of their simple physical properties.</li> </ul> <p><b>Everyday materials (Year 2)</b></p>  | <p><b>Investigation and Enquiry Design Evaluation</b></p> | <p>Cycle A – Spring 2</p> <p>Cycle B – Autumn 2</p>                           | <p>This is in the National Curriculum as a year 1 and year 2 topic. The knowledge and skills developed in this topic will be revisited at various points across key stage 1 and key stage 2, to ensure the information can be recalled accurately. We have paired one of these units with an art and design unit on textiles so the children can apply their knowledge of materials to their designs.</p> <p><b>EYFS</b><br/>Spring 1 &amp; 2</p> <p><b>KS2</b><br/>Year 5/6 Cycle A Autumn 1 - Changes of Materials</p>  |

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| <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses.</li> <li>Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.</li> </ul>  |   |                           | <p>Year 3/4 Cycle B Autumn 2 - States of Matter<br/>Year 5/6 Cycle B Autumn 2 - Properties of Materials</p>   |
| <p><b><u>Seasonal changes</u></b><br/>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>Observe changes across the four seasons.</li> <li>Observe and describe weather associated with the seasons and how day length varies.</li> </ul>   | <p><b>Investigation and Enquiry<br/>Design<br/>Evaluation</b></p> | <p>Cycle B – Spring 2</p> | <p>This topic is in the National Curriculum as a year 1 and year 2 topic. We have placed this after a topic on plants and during the Spring term so children can apply their knowledge of plants to this context and see seasonal change in action as they move from Spring to Summer.</p> <p><b>EYFS</b><br/>Autumn 1<br/>Autumn 2<br/>Spring 1<br/>Spring 2<br/>Summer 1<br/>Summer 2</p> <p><b>KS2</b><br/>Year 3/4 Cycle B Spring 1 - Plants<br/>Year 5/6 Cycle B Autumn 1 - Earth and Space</p>  |
| <p><b><u>Living things and their habitats</u></b><br/>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>Explore and compare the differences between things that are living, dead, and things that have never been alive.</li> <li>Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other.</li> <li>Identify and name a variety of plants and animals in their habitats, including microhabitats.</li> <li>Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food.</li> </ul> | <p><b>Investigation and Enquiry<br/>Design<br/>Evaluation</b></p> | <p>Cycle A – Autumn 2</p> | <p>This topic is in the National Curriculum as a year 1 and year 2 topic. We have placed this unit alongside a Geography unit on continents and oceans so children can think about these different habitats, and the living things within them, in context.</p> <p><b>EYFS</b><br/>Autumn 1 &amp; 2<br/>Spring 1<br/>Summer 1 &amp; 2</p> <p><b>KS2</b><br/>Year 3/4 Cycle A Spring 1 - Living Things and Their Habitats<br/>Year 5/6 Cycle A Autumn 2 - Living Things and Their Habitats, Classification<br/>Year 5/6 Cycle A Autumn 2 - Living Things and Their Habitats, Life Cycles</p> |

## Key Stage 2

The principal focus of science teaching in key stage 2 is to enable pupils to develop a deeper understanding of a wide range of scientific ideas. They should do this through exploring and talking about their ideas; asking their own questions about scientific phenomena; and analysing functions, relationships and interactions more systematically. At upper key stage 2, they should encounter more abstract ideas and begin to recognise how these ideas help them to understand and predict how the world operates. They should also begin to recognise that scientific ideas change and develop over time. They should select the most appropriate ways to answer science questions using different types of scientific enquiry, including observing changes over different periods of time, noticing patterns, grouping and classifying things, carrying out comparative and fair tests and finding things out using a wide range of secondary sources of information. Pupils should draw conclusions based on their data and observations, use evidence to justify their ideas, and use their scientific knowledge and understanding to explain their findings.

‘Working and thinking scientifically’ is described separately at the beginning of the programme of study but must always be taught through and clearly related to substantive science content in the programme of study. Throughout the notes and guidance, examples show how scientific methods and skills might be linked to specific elements of the content.

Pupils should read, spell and pronounce scientific vocabulary accurately.

| <b>National Curriculum</b>   | <b>Learning Lenses</b>  | <b>When is it taught?</b>   | <b>Links with EYFS and KS1</b>   |
|--|---|---|--|
| <p><b><u>Working Scientifically (Years 3 and 4)</u></b><br/>           During years 3 and 4, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:</p> <ul style="list-style-type: none"> <li>● Asking relevant questions and using different types of scientific enquiries to answer them.</li> <li>● Setting up simple practical enquiries, comparative and fair tests.</li> <li>● Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers.</li> <li>● Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions.</li> <li>● Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.</li> <li>● Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results</li> </ul> | <p><b>Investigation and Enquiry</b><br/> <b>Design</b><br/> <b>Evaluation</b></p> | <p><b>Throughout the key stage 2 curriculum, building on the skills learnt in key stage 1, linking in to the knowledge content and giving the children a clear context for applying the skills they will be learning.</b></p> | <p><b>The working scientifically skills are the threads that pull together the whole of the science curriculum. These skills will be taught through each programme of study and build upon skills learnt in key stage 1. As children move through their time in key stage 2 they will continue to build on these skills even further, preparing them for further in-depth study and development of these skills in key stage 3.</b></p> <p><b>EYFS</b><br/> <b>Spring 2 - floating and sinking</b><br/> <b>Summer 1 &amp; 2 - planting and growing</b></p> |

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| <ul style="list-style-type: none"> <li>and conclusions.</li> <li>Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.</li> <li>Identifying differences, similarities or changes related to simple scientific ideas and processes.</li> <li>Using straightforward scientific evidence to answer questions or to support their findings.</li> </ul>   |   |  |  |
| <p><b>Plants</b><br/>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers.</li> <li>Explore the requirements of plants for life and growth (air, light, water, nutrients from soil and room to grow) and how they vary from plant to plant.</li> <li>Investigate the way in which water is transported within plants.</li> <li>Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.</li> </ul>   | <p><b>Investigation and Enquiry Design Evaluation</b></p> | <p><b>Year 3/4 Cycle B – Spring 1</b></p>  | <p>This is in the National Curriculum as a year 3 and year 4 topic. Placing this topic in the Spring term will allow children to see the natural growth cycle of plants and apply their learning to a real-life context. The knowledge and skills developed in this topic will be revisited at various points across Key Stage 2, to ensure the information can be recalled accurately.</p> <p><b>EYFS</b><br/>Autumn 2<br/>Spring 2<br/>Summer 1</p> <p><b>KS1</b><br/>Cycle A Spring 1 - Plants (Year 1)<br/>Cycle B Spring 1 - Plants (Year 2)</p>              |
| <p><b>Animals including humans (Year 3)</b><br/>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>Identify that animals, including humans, need the right types and amounts of nutrition, and that they cannot make their own food; they get nutrition from what they eat.</li> <li>Identify that humans and some other animals have skeletons and muscles for support, protection and movement.</li> </ul> <p><b>Animals including humans (Year 4)</b><br/>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>Describe the simple functions of the basic parts of the digestive system in humans.</li> <li>Identify the different types of teeth in humans and their simple functions.</li> <li>Construct and interpret a variety of food chains, identifying producers, predators and prey.</li> </ul> | <p><b>Investigation and Enquiry Design Evaluation</b></p> | <p><b>Year 3/4 Cycle A – Autumn 1</b><br/><b>Year 3/4 Cycle B – Spring 2</b></p> | <p>This is in the National Curriculum as a year 3 and year 4 topic. The knowledge and skills developed in this topic will be revisited at various points across Key Stage 2, to ensure the information can be recalled accurately.</p> <p><b>EYFS</b><br/>Autumn 2<br/>Spring 2<br/>Summer 1</p> <p><b>KS1</b><br/>Cycle A Summer 1 - Animals Including Humans 1, Growth Cycle A Summer 2 - Animals Including Humans, About Me<br/>Cycle B Autumn 1 - Animals Including Humans, All About Animals<br/>Cycle B Summer 2 - Animals Including Humans, Life Cycles</p> |
| <p><b>Rocks</b><br/>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>Compare and group together different kinds of rocks on the basis of their appearance and simple physical</li> </ul>  | <p><b>Investigation and Enquiry Evaluation</b></p>        | <p><b>Year 3/4 Cycle A – Spring 2</b></p>  | <p>This is in the National Curriculum as a year 3 and year 4 topic. The knowledge and skills developed in this topic will be revisited at various points across Key Stage 2, to ensure the information can be recalled accurately.</p>   |

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| <ul style="list-style-type: none"> <li>properties.</li> <li>Describe in simple terms how fossils are formed when things that have lived are trapped within rock.</li> <li>Recognise that soils are made from rocks and organic matter.</li> </ul>  |   |   | <p><b>KS1</b><br/> Cycle A Autumn 1 - Everyday Materials 1<br/> Cycle A Spring 2 - Everyday Materials 2<br/> Cycle B Autumn 2 - Uses of Everyday Materials</p>  |
| <p><b>Light</b><br/> Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>Recognise that they need light in order to see things and that dark is the absence of light.</li> <li>Notice that light is reflected from surfaces.</li> <li>Recognise that light from the sun can be dangerous and that there are ways to protect their eyes.</li> <li>Recognise that shadows are formed when the light from a light source is blocked by an opaque object.</li> <li>Find patterns in the way that the size of shadows change.</li> </ul>   | <p><b>Investigation and Enquiry</b><br/> <b>Design</b><br/> <b>Evaluation</b></p> | <p>Year 3/4 Cycle A – Summer 1</p>                                  | <p>This is in the National Curriculum as a year 3 and year 4 topic. The knowledge and skills developed in this topic will be revisited at various points across Key Stage 2, to ensure the information can be recalled accurately.</p> <p><b>EYFS</b><br/> Autumn 2</p>   |
| <p><b>Forces and magnets</b></p> <ul style="list-style-type: none"> <li>Compare how things move on different surfaces.</li> <li>Notice that some forces need contact between two objects, but magnetic forces can act at a distance.</li> <li>Observe how magnets attract or repel each other and attract some materials and not others.</li> <li>Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials.</li> <li>Describe magnets as having two poles.</li> <li>Predict whether two magnets will attract or repel each other, depending on which poles are facing.</li> </ul> | <p><b>Investigation and Enquiry</b><br/> <b>Design</b><br/> <b>Evaluation</b></p> | <p>Year 3/4 Cycle B – Summer 2</p>                                  | <p>This is in the National Curriculum as a year 3 and year 4 topic. The knowledge and skills developed in this topic will be revisited at various points across Key Stage 2, to ensure the information can be recalled accurately. This topic is linked with a Design and Technology unit based on mechanical structures so the children will be able to apply what they have learnt to a different context.</p> <p><b>EYFS</b><br/> Spring 1</p> <p><b>KS1</b><br/> Cycle A Autumn 1 - Everyday Materials 1<br/> Cycle A Spring 2 - Everyday Materials 2</p> |
| <p><b>Living things and their habitats</b><br/> Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>Recognise that living things can be grouped in a variety of ways.</li> <li>Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment.</li> <li>Recognise that environments can change and that this can sometimes pose dangers to living things.</li> </ul>  | <p><b>Investigation and Enquiry</b><br/> <b>Design</b><br/> <b>Evaluation</b></p> | <p>Year 3/4 Cycle A – Spring 1<br/> Year 3/4 Cycle B – Summer 1</p> | <p>This is in the National Curriculum as a year 3 and year 4 topic. The knowledge and skills developed in this topic will be revisited at various points across Key Stage 2, to ensure the information can be recalled accurately. One of our units has been linked to a local history study so the children can apply their knowledge of conservation to their local area.</p> <p><b>EYFS</b><br/> Autumn 1<br/> Autumn 2<br/> Summer 1<br/> Summer 2</p> <p><b>KS1</b></p>  |

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|   |   |                             | Cycle A Autumn 2 - Living Things and Their Habitats<br>Cycle B Summer 1 - Habitats Around the World   |
| <p><b>States of matter</b></p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>• Compare and group materials together, according to whether they are solids, liquids or gases.</li> <li>• Observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius.</li> <li>• Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.</li> </ul>  | <p><b>Investigation and Enquiry</b></p> <p><b>Design</b></p> <p><b>Evaluation</b></p> | Year 3/4 Cycle B – Autumn 2 | <p>This is in the National Curriculum as a year 3 and year 4 topic. The knowledge and skills developed in this topic will be revisited at various points across Key Stage 2, to ensure the information can be recalled accurately.</p> <p><b>EYFS</b><br/>Spring 1</p> <p><b>KS1</b><br/>Cycle A Autumn 1 - Everyday Materials 1<br/>Cycle A Spring 2 - Everyday Materials 2</p>  |
| <p><b>Sounds</b></p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>• Identify how sounds are made, associating some of them with something vibrating.</li> <li>• Recognise that vibrations from sounds travel through a medium to the ear.</li> <li>• Find patterns between the pitch of a sound and features of the object that produced it.</li> <li>• Find patterns between the volume of a sound and the strength of the vibrations that produced it.</li> <li>• Recognise that sounds get fainter as the distance from the sound source increases.</li> </ul>  | <p><b>Investigation and Enquiry</b></p> <p><b>Design</b></p> <p><b>Evaluation</b></p> | Year 3/4 Cycle A – Autumn 2 | <p>This is in the National Curriculum as a year 3 and year 4 topic. The knowledge and skills developed in this topic will be revisited at various points across Key Stage 2, to ensure the information can be recalled accurately. We will make links between our learning in this topic and our learning in Music to understand how we hear the sounds that are made.</p> <p><b>EYFS</b><br/>Autumn 2</p> <p><b>KS1</b><br/>Cycle B Autumn 2 - Uses of Everyday Materials</p>    |
| <p><b>Electricity</b></p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>• Identify common appliances that run on electricity.</li> <li>• Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers.</li> <li>• Identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery.</li> <li>• Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit.</li> <li>• Recognise some common conductors and insulators, and associate metals with being good</li> </ul> | <p><b>Investigation and Enquiry</b></p> <p><b>Design</b></p> <p><b>Evaluation</b></p> | Year 3/4 Cycle A – Summer 2 | <p>This is in the National Curriculum as a year 3 and year 4 topic. The knowledge and skills developed in this topic will be revisited at various points across Key Stage 2, to ensure the information can be recalled accurately. This topic is linked with a Design and Technology unit based on electrical systems so the children will be able to apply what they have learnt to a different context.</p> <p><b>KS1</b><br/>Cycle B Autumn 2 - Uses of Everyday Materials</p> |

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| <p><b><u>Working Scientifically (Years 5 and 6)</u></b><br/> During years 5 and 6, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:</p> <ul style="list-style-type: none"> <li>• Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.</li> <li>• Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate.</li> <li>• Recording data and results of increasing complexity, using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.</li> <li>• Using test results to make predictions to set up further comparative and fair tests.</li> <li>• Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations.</li> <li>• Identifying scientific evidence that has been used to support or refute ideas or arguments.</li> </ul> | <p><b>Investigation and Enquiry</b><br/> <b>Design</b><br/> <b>Evaluation</b></p> | <p>Throughout the key stage 2 curriculum, building on the skills learnt in key stage 1, linking in to the knowledge content and giving the children a clear context for applying the skills they will be learning.</p> | <p>The working scientifically skills are the threads that pull together the whole of the science curriculum. These skills will be taught through each programme of study and build upon skills learnt in key stage 1. As children move through their time in key stage 2 they will continue to build on these skills even further, preparing them for further in depth study and development of these skills in key stage 3.</p>   |
| <p><b><u>Living things and their habitats (Year 5)</u></b><br/> Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>• Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird.</li> <li>• Describe the life process of reproduction in some plants and animals.</li> </ul> <p><b><u>Living things and their habitats (Year 6)</u></b><br/> Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>• Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals.</li> <li>• Give reasons for classifying plants and animals based on specific characteristics.</li> </ul>  | <p><b>Investigation and Enquiry</b><br/> <b>Design</b><br/> <b>Evaluation</b></p> | <p>Year 5/6 Cycle A – Autumn 2<br/> Year 5/6 Cycle A – Summer 1</p>  | <p>This is in the National Curriculum as a year 5 and year 6 topic. The knowledge and skills developed in this topic will be revisited at various points across Key Stage 2, to ensure the information can be recalled accurately.<br/> One of these units has been paired with a local Geography topic based around the Broads. This will allow children to explore living things and their habitats in a more local environment and apply what they have learned in their Science lessons.</p> <p><b><u>EYFS</u></b><br/> Autumn 1<br/> Autumn 2<br/> Summer 1<br/> Summer 2</p> <p><b><u>KS1</u></b><br/> Cycle A Autumn 2 - Living Things and Their Habitats<br/> Cycle B Summer 1 - Habitats Around the World</p> |
| <p><b><u>Animals including humans (Year 5)</u></b><br/> Pupils should be taught to:</p>   | <p><b>Investigation and Enquiry</b><br/> <b>Design</b></p>                        | <p>Year 5/6 Cycle A – Spring 2</p>   | <p>This is in the National Curriculum as a year 5 and year 6 topic. The</p>  |

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| <ul style="list-style-type: none"> <li>Describe the changes as humans develop to old age.</li> </ul> <p><b>Animals including humans (Year 6)</b><br/>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood.</li> <li>Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function.</li> <li>Describe the ways in which nutrients and water are transported within animals, including humans.</li> </ul>  | <p><b>Evaluation</b></p>  | <p>Year 5/6 Cycle A – Summer 2</p>                                 | <p>knowledge and skills developed in this topic will be revisited at various points across Key Stage 2, to ensure the information can be recalled accurately.</p> <p><b>EYFS</b><br/>Autumn 2<br/>Spring 2<br/>Summer 1</p> <p><b>KS1</b><br/>Cycle A Summer 1 - Animals Including Humans 1, Growth<br/>Cycle A Summer 2 - Animals Including Humans, About Me<br/>Cycle B Autumn 1 - Animals Including Humans, All About Animals<br/>Cycle B Summer 2 - Animals Including Humans, Life Cycles</p> |
| <p><b>Properties and changes of materials</b><br/>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>Compare and group together everyday materials based on their properties including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets.</li> <li>Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution.</li> <li>Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating.</li> <li>Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic.</li> <li>Demonstrate that dissolving, mixing and changes of state are reversible changes.</li> <li>Explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda.</li> </ul> | <p><b>Investigation and Enquiry</b><br/><b>Design</b><br/><b>Evaluation</b></p> | <p>Year 5/6 Cycle A – Autumn 1<br/>Year 5/6 Cycle B – Autumn 2</p> | <p>This is in the National Curriculum as a year 5 and year 6 topic. The knowledge and skills developed in this topic will be revisited at various points across Key Stage 2, to ensure the information can be recalled accurately.</p> <p><b>EYFS</b><br/>Spring 1</p> <p><b>KS1</b><br/>Cycle A Autumn 1 - Everyday Materials 1<br/>Cycle A Spring 2 - Everyday Materials 2<br/>Cycle B Autumn 2 - Uses of Everyday Materials</p>  |
| <p><b>Earth and Space</b><br/>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>Describe the movement of the Earth and other planets relative to the sun in the solar system.</li> <li>Describe the movement of the moon relative to the Earth.</li> </ul>  | <p><b>Investigation and Enquiry</b><br/><b>Evaluation</b></p>                   | <p>Year 5/6 Cycle B – Autumn 1</p>                                 | <p>This is in the National Curriculum as a year 5 and year 6 topic. The knowledge and skills developed in this topic will be revisited at various points across Key Stage 2, to ensure the information can be recalled accurately.</p> <p><b>EYFS</b></p>   |



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| <ul style="list-style-type: none"> <li>Describe the sun, Earth and moon as approximately spherical bodies.</li> <li>Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.</li> </ul>   |   |                                    | <p>Spring 1</p> <p><b>KS1</b><br/>Cycle B Spring 2 - Seasonal Changes</p>   |
| <p><b>Forces</b><br/>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>Explain that unsupported objects fall towards Earth because of the force of gravity acting between Earth and the falling object.</li> <li>Identify the effects of air resistance, water resistance and friction that act between moving surfaces.</li> <li>Recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect.</li> </ul>  | <p><b>Investigation and Enquiry Design Evaluation</b></p> | <p>Year 5/6 Cycle B – Summer 2</p> | <p>This is in the National Curriculum as a year 5 and year 6 topic. The knowledge and skills developed in this topic will be revisited at various points across Key Stage 2, to ensure the information can be recalled accurately.</p> <p><b>EYFS</b><br/>Spring 1<br/>Spring 2</p> <p><b>KS1</b><br/>Cycle A Autumn 1 - Everyday Materials 1<br/>Cycle A Spring 2 - Everyday Materials 2<br/>Cycle B Autumn 2 - Uses of Everyday Materials</p> |
| <p><b>Evolution and inheritance</b><br/>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago.</li> <li>Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents.</li> <li>Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.</li> </ul>                      | <p><b>Investigation and Enquiry Design Evaluation</b></p> | <p>Year 5/6 Cycle A – Spring 1</p> | <p>This is in the National Curriculum as a year 5 and year 6 topic. The knowledge and skills developed in this topic will be revisited at various points across Key Stage 2, to ensure the information can be recalled accurately.</p> <p><b>EYFS</b><br/>Autumn 1 - how I have changed<br/>Summer 1 - farm animals, insects and life cycles</p>  |
| <p><b>Light</b><br/>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>Recognise that light appears to travel in straight lines.</li> <li>Use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye.</li> <li>Explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes.</li> <li>Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.</li> </ul> | <p><b>Investigation and Enquiry Design Evaluation</b></p> | <p>Year 5/6 Cycle B – Spring 1</p> | <p>This is in the National Curriculum as a year 5 and year 6 topic. The knowledge and skills developed in this topic will be revisited at various points across Key Stage 2, to ensure the information can be recalled accurately.</p> <p><b>EYFS</b><br/>Autumn 2</p>  |

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| <p><b>Electricity</b></p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>• Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells in the circuit.</li> <li>• Compare and give reasons for the variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches.</li> <li>• Use recognised symbols when representing a simple circuit in a diagram.</li> </ul> | <p><b>Investigation and Enquiry</b></p> <p><b>Design</b></p> <p><b>Evaluation</b></p> | <p><b>Year 5/6 Cycle B – Spring 2</b></p> | <p>This is in the National Curriculum as a year 5 and year 6 topic. The knowledge and skills developed in this topic will be revisited at various points across Key Stage 2, to ensure the information can be recalled accurately.</p> <p><b>KS1</b></p> <p><b>Cycle B Autumn 2 - Uses of Everyday Materials</b></p> |
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